STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
JOHNSON CITY ENVIRONMENTAL FIELD OFFICE
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September 19, 2016

Mr. William L. Sorah
City Manager, City of Bristol, Tennessee
P. O. Box 1189
Bristol, Tennessee 37621-1189

RE: **Compliance Evaluation Inspection and Sanitary Sewer Overflow Inspection**
Bristol STP #2
NPDES Permit #TN0023531
Sullivan County

Dear Mr. Sorah:

Personnel from the Division of Water Resources conducted a Compliance Evaluation Inspection at the Bristol STP #2 and a Sanitary Sewer Overflow Inspection of Bristol's sewage collection system on August 23, 24, and 29, 2016. The Division of Water Resources would like to thank the staff of Severn-Trent Services for their time and assistance in completing the inspection.

I. Permit

NPDES Permit TN0023531 was issued on April 30, 2013 and became effective on June 1, 2013. The permit will expire on May 31, 2018.

II. Lift Stations Visited During Inspection

During the inspection, the operation and maintenance of the sewer lift stations was evaluated. Since the last inspection, Bristol's collection system has had inflow and infiltration concerns. The Sinking Creek watershed has been most prone to overflows, directly related to rainfall events. To combat the problem, Bristol has installed portable flow meters in manholes to isolate areas of inflow and infiltration in the collection system. As areas of high flow during rain events are isolated, the lines are videoed and smoked to find the source of problems, and the results are documented. Identified problems are then prioritized and repaired. The lift stations inspected are listed below, along with applicable comments:

- Bristol Raceway pump station: This station is manned during races and other large events. Spare parts and tools are kept on site, because traffic in the area during those events is so heavy that the station cannot otherwise be accessed during those events.
- Grove Park pump station
- Shankelmill Road pump station
- Hampton Inn pump station
- Franklin Drive pump station: This station collects sewage from the county jail and is subject to problems caused by the prisoners flushing objects down the toilets. The jail has a screen that collects most of the matter that can cause problems with the collection system. Rarely, some objects make it past the screen and cause pump station failure.
- Feathers Chapel pump station: The check valve on pump #1 is slow to prime and can take as long as five minutes to prime. The manufacture has said that this is within specifications, but the plan is to take that check valve out of service and rebuild it.
- Evens Creek pump station: There was some erosion noted around the lift station.
- Allison Road pump station
- Mary Hughes pump station
- Mountain View pump station: This is a "can" station that personnel must enter by way of a ladder to inspect.
- Tri-County Industrial Park pump station
- Century Court pump station
- Bristol Road pump station: This is a "can" station that personnel must enter by way of a ladder to inspect.
- Boone Lake is the pump station that serves the Bluff City area.
- Fairfield pump station
- Brighton Place pump station
- Candlewyck pump station: This station had a pump seal failure. The pump has been taken out of service and is being repaired. The pump will be reinstalled after repairs are completed.
- Tara Hills pump station

- Millwood pump station

- Sinking Creek pump station: The Sinking Creek lift station has been the most prone to overflows, directly related to rainfall events. To combat the problem, Bristol has been making repairs to the Sinking Creek watershed collection system. The repairs appear to be causing the number of overflows in the Sinking Creek lift station to be trending downward in frequency and duration.

- Fox Meadows pump station

III. Overflows Reported by the POTW

Inflow and infiltration (I&I) repairs have significantly reduced overflows in the Sinking Creek watershed. Bluff City has begun a study of the collection system in that town; Bluff City's collection system is connected to the Boone Lake pump station. The I&I repairs in Bluff City should help with overflows at the Boone Lake pump station. These are a listing of the self-reported overflows:

An overflow at 140 Bellbrook Road on April 7, 2015 was caused by wet weather. The overflow was reported by telephone on April 7, 2015, and the letter was received April 13, 2015.

A sewer leak on Laredo Drive on April 13, 2015 was caused by roots in the line. The overflow was reported by telephone on April 14, 2016, and the letter was received April 27, 2015.

A leak at 3882 Highway 11E on December 11, 2015 was caused by a sewer line break. The overflow was reported by telephone on December 11, 2015, and the letter was received January 7, 2016.

An overflow at the Boone Lake lift station, on December 24 2015 was caused by excessive rain. The overflow was reported by telephone on December 24, 2015, and the letter was received December 28, 2015.

An overflow at the Mountain View Drive lift station, on January 29, 2016 was caused by an equipment failure. The overflow was reported by telephone on January 29, 2016, and the letter was received on February 2, 2016.

An overflow at the Egypt Road lift station on January 14, 2016 was caused by equipment failure. The overflow was reported by telephone on January 14, 2016, and the letter was received on January 15, 2016.

The overflow on February 3, 2016 at the lift station on 578 Beaver Creek Road was caused by an excessive rain event. The overflow was reported by telephone on February 4, 2016, and the letter was received on February 5, 2016.

The overflow at 825 Anderson Street on May 6, 2016 was reported to have been caused by a contractor breaking a sewer line. The overflow was reported on May 6, 2016, and the letter was received on May 6, 2016.

IV. Records and Reports

Selected records and reports, including log books, bench sheets, chains of custody, laboratory reports, and monthly Discharge Monitoring Reports (DMR's) from February and July 2016 were evaluated during the inspection. Various portions of NPDES Permit #TN0023531, including Part 1.2.4. and Part 1.2.5. contain monitoring, reporting, and documentation requirements. The reports that were reviewed appeared to be logical, correct, and in order.

Reported permit violations for the year 2015 to present are:

- There was one BOD exceedance on May 28, 2015. The daily maximum limit is 45 mg/L; the sample analytical result was 53 mg/L.
- There was one BOD exceedance on January 10, 2016. The daily maximum limit is 45 mg/L; the sample analytical result was 53 mg/L.
- There was a chlorine exceedance on January 12, 2016. The daily maximum limit is 0.31 mg/L; the sample analytical result was 0.68 mg/L.
- There was one monthly BOD removal efficiency exceedance for February 2016. The average for February was 82% removal; the required monthly average removal is 85%.
- There was one BOD exceedance on February 23, 2016. The daily maximum limit is 45 mg/L; the sample analytical result was 55 mg/L.
- There was one monthly BOD removal efficiency exceedance for February 2016. The average for February was 82% removal; the required monthly average removal is 85%.
- There was one BOD exceedance on May 18, 2016. The daily maximum limit is 112 mg/L; the sample analytical result was 55 mg/L.
- A final effluent E. coli excursion occurred May 19 from a suspected organic shock loading. The excursion value was 1,210 CFU, and the daily limit is 487 CFU.
- There was one BOD exceedance on July 28, 2016. The daily maximum limit is 81 mg/L; the sample analytical result was 55 mg/L.
- There was a chlorine exceedance on July 29, 2016. The daily maximum limit is 0.31 mg/L; the sample analytical result was 0.53 mg/L.

All of the BOD and most of the chlorine exceedances have been due to an industry shock loading high BOD waste to the system. The pretreatment program for Bristol has identified the industry

that has been discharging in exceedance of their pretreatment permit limits and is now working with the industry to remedy the situation.

V. Facility Site Review, Self-Compliance Program, and Operation & Maintenance

Part 2.1.4. of NPDES Permit TN0023531 contains requirements for proper operation and maintenance of facilities and systems. The site condition appeared good. The following general observations were noted:

- A SCADA system has been installed to monitor the wastewater treatment facility and the main lift stations.
- New, more efficient, blowers, manifolds, and diffusers are in the plans to be installed in the near future. The blowers have had plans and specifications developed, and bids are ready to be let for the project.
- No concerns in the operation and maintenance of the waste water treatment facility were noted during the inspection.

VI. Receiving Waters

The outfall for NPDES Permit TN0023531 is located at Boone Reservoir. The sign advising that the outfall is in the lake could not be located. Permit TN0023531 3.0. PERMIT SPECIFIC REQUIREMENTS, 3.5. PLACEMENT OF SIGNS requires that a sign be in place to alert the public to the location of the outfall line and must be replaced.

VII. Flow measurement

NPDES Permit TN0023531 requires that flow be recorded daily, this is found in 1.1. NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS. Flow measurement is continuous with ultrasonic level meters at the influent and effluent lines. The inspection included evaluation of the flow measurement equipment and procedures. Flow is documented daily as required by the permit.

The flow meters are calibrated twice per year. All documentation for these calibrations is kept on file for three years, as required by the permit. As required by the permit, the influent flow meter is used for compliance. The effluent flow meter is an eight foot rectangular weir. The average flow of the treatment facility is at the bottom of the flow range for the weir size, and accuracy of flow measurement is insufficient for compliance. The influent flow measurement device is an ultrasonic sensor at a stilling well with a Parshall flume. The stilling well was installed because of turbulence at the Parshall flume. This appears to meet the permit requirements for flow measurement.

VIII. Laboratory

NPDES Permit TN0023531 Part 1.2. requires that all parameters for the analysis of the wastewater follow the guidelines as outlined in 40 CFR 136. Most of the analysis required for compliance is performed on site. Listed below are the observations at the time of the inspection.

- A lab manual has been developed for all analytical testing. This includes all tests used for compliance and for the operation of the wastewater treatment facility. This manual also includes a written Quality Assurance/Quality Control (QA/QC) program.

- Standard Method 2550 B-2000 requires that the thermometers be periodically checked against a NIST-certified thermometer in the temperature range that the thermometers are used. The temperature correction factor must be recorded and used to correct the temperature recorded in the bench sheets. These checks must be done regularly and documented in the quality assurance/quality control log book. LabtronX checked the thermometers against a NIST certified thermometer in March and put a sticker on each thermometer, which was checked against a NIST certified thermometer, stating the temperature correction factor. This is documented in the Quality Assurance/Quality Control (QA/QC) documentation log.

- The balance is zeroed and checked daily with ANSI/ASTM class 1 weights that bracket the normal usage range, on days that the balance is used.

- A QA/QC procedure has been instituted for all analytical tests required by the permit. All QA/QC is documented as outlined in Standard Methods for the Examination of Water and Wastewater.

- A Standard Operating Procedure (SOP) has been developed for the analysis of all analytical testing performed in the lab. These SOPs have been individualized for Bristol's lab.

- Standard Methods for the Examination of Water and Wastewater states that biochemical oxygen demand (BOD) initial dissolved oxygen must be between 7 mg/L and 9 mg/L of dissolved oxygen (D.O.) as an initial D.O. at 20°C ± 1.0°C. Initial D.O. is checked in each sample and adjusted to be between 7 and 9 mg/L, if needed.

- All BOD samples are checked for chlorine residual, and sodium sulfate is added to neutralize the chlorine if it is found.

- All BOD samples are analyzed for pH, and none of the effluent samples have ever been out of the 6.0 to 8.5 pH range. Some of the industrial samples for the Bristol pretreatment program have been out of range and have had to have the pH adjusted to the required 6.5 to 7.5 pH range after adjustment.

- The D.O. meter is calibrated using saturated air each day that the D.O. meter is used. These calibrations are documented each day.

- The D.O. incubator is checked each morning to determine that the incubator maintains 20 °C ± 1.0°C.

- The laboratory temperature is checked each morning to be sure that the ambient temperature is 20°C ± 3.0°C and documented daily.

- The BOD seed source is purchased from Biosystems Seeds and mixed daily when BOD analysis is done. The lot number of the BOD seed was documented as B12D151109B1. The seed appeared to be properly measured and prepared, and the seed is used to seed all BOD samples.

- Two seed controls are run each day samples are analyzed, and the seed corrections are calculated and used to adjust the results of the seeded samples.

- All reagents in the lab are properly labeled and stored. The day the reagents are received and opened are written on the reagent bottles. All BOD bottles are water sealed before incubation.

- All BOD calculations appear to be properly calculated. All BOD calculations are verified by another analyst in the lab for accuracy.

- Glucose-Glutamic Acid (GGA) standards are analyzed five days per week. Seed controls are run and appear to be correctly applied to the GGA analysis. GGA is commercially prepared and analyzed at a 2% dilution. The GGA results meet the 198 ± 30.5 mg/L BOD standard.

IX. Sludge Handling and Disposal

Permit TN0023531 Part 3.3 outlines the disposal of biosolids. A sludge belt filter press is used to dewater the biosolids, and lime is added to meet the vector attraction standard. The biosolids are stored at the wastewater treatment facility on a concrete pad until the biosolids are land applied at approved land application sites.

X. Additional Comments

The activated bio-filtration is to be phased out of the treatment of wastewater in Bristol. This requires that a request for a permit modification be submitted to the permit section removing the activated bio-filtration from the treatment process. The activated bio-filtration was installed when there were several industries that discharged to Bristol's wastewater system. All of the industry that required the activated bio-filtration is no longer on the Bristol System.

The missing sign notifying the public of the location of the outfall must be replaced on or before November1, 2016. When the sign is replaced the Division must be notified that the replacement is complete and a follow up inspection scheduled.

XI. Conclusion

NPDES permitting helps to protect fish, aquatic life and stream quality downstream of the outfall, for all Tennesseans. Thank you for your hard work and diligence in protecting water quality in Tennessee. If you have any questions concerning this correspondence, please contact me at (423) 854-5457 or at Robert.Tipton@tn.gov.

Sincerely,

Robert Tipton
Environmental Scientist 3
Division of Water Resources
Johnson City Environmental Field Office

RLT/190116264

cc: Mr. Matthew Dake, Project Manager, Severn Trent Services, 578 Beaver Creek Rd., Bluff City TN 37618-1220
Mr. Timothy Beavers, Director of Public Works, Bristol Public Works Department, 212 Blackley Rd., Bristol, TN 37620
Waterlog